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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/599,532

01/16/2008

Shigenobu Nakamura

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EXAMINER

SAN MARTIN, JAYDI A

ART UNIT

PAPER NUMBER

2837

NOTIFICATION DATE

DELIVERY MODE

01/25/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ctkeyner@hhlaw.com  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/599,532	<b>Applicant(s)</b> NAKAMURA ET AL.	
	<b>Examiner</b> J. SanMartin	<b>Art Unit</b> 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 7-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/2/09, 4/16/09, 9/29/06</u> .                                | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I (claims 1-6) in the reply filed on 11/3/09 is acknowledged.

### ***Specification***

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yokoyama (US 6381118).

Regarding claim 1, Yokoyama discloses a multilayer piezoelectric element (100) comprising: a stack having an active portion constituted from at least one piezoelectric layer (11) and a plurality of internal electrodes (10) consisting of the first and the second internal electrodes placed one on another, the active portion being subjected to expansion and contraction in response to a voltage applied across the first internal electrode and the second internal

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electrode; and external electrodes (13) formed on two side faces of the stack, one of said external electrodes being connected to the first internal electrode and the other of said external electrodes being connected to the second internal electrode, wherein each of the external electrodes has three or more layers including a first layer formed in contact with the side face of the stack and a second layer formed on the first layer (refer to figure 1, elements 13a, 13b and 13c).

Regarding claim 2, Yokoyama discloses the layer 13a having a thickness of 10mm or less (between 5-10 $\mu$ m; column 6, lines 52-55).

Regarding claim 3, Yokoyama discloses layer 13a comprising copper oxide and layer 13b made of nickel. In claim 3, it is not clear what the Applicant means by "the first layer including a metal oxide higher than the second layer". Please explain.

Regarding claim 5, Yokoyama discloses layer 13a comprising Cu<sub>2</sub>O and glass.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama.

Regarding claim 4, Yokoyama teaches the outer most layer (13c) comprising a combination of tin and lead and does not contain a metal oxide.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a metal oxide to form the electrode layers since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its

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suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. It is the Examiner's position that the general characteristics, advantages and disadvantages of *specific materials*, such as metal oxides to form *external electrodes* are well known, so that the choice of anyone of them as a substitute for any one of the others to obtain the known or naturally expected advantages of the chosen material presents in general a case of good judgment instead of a case of invention.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama in view of Tani (US 5935485).

Yokoyama discloses the claimed invention wherein the stack comprises inactive layers made of piezoelectric material located on both ends. Yokoyama fails to disclose the inactive layers including dispersed metal.

Tani discloses a piezoelectric element having inactive piezoelectric layers including dispersed metal to provide a piezoelectric material which exhibits a large electrically induced strain under a strong electric field, to improve the straining ability of the piezoelectric material by optimizing the configuration and state of the dispersed noble metal particles, straining ability which stems from the dispersion of the noble metal particles and to provide a piezoelectric material which effects a good straining ability regardless of a reduced addition amount of noble metal element.

Therefore, it would have been obvious at the time of the invention was made to add dispersed metal to the inactive layers to improve the strain characteristics of the system.

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***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. San Martin whose telephone number is 571-272-2018. The examiner can normally be reached on M-Th 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Benson can be reached on 571-272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jaydi SanMartin/  
Primary Examiner  
Art Unit 2837

January 21, 2010